MASTER

41

Annual Minimum Temperatures.

Introduction.

For the calculation of the heating requirements of glasshouses, knowledge is required of the lowest air temperatures likely to be experienced during a year.

This memorandum analyses the available data of the annual minimum temperatures.

Data. Some hundred stations in England and Wales are available with records of 30-60 years during the present century. No attempt has been made to reduce these to a common period, and it must be remembered that the winters of the first 40 years of the twentieth century were generally mild. The stations with the shorter period of observations, say 1920-1960, are therefore likely to indicate lower annual minima, than those of the full 60 years. The difference, however, is likely to be small.

Method of Analysis.

It is not easy to find a satisfactory simple method. The range of annual minima is large, there is no obvious mode. For ease of extraction, it was decided to record the median values and also the value which was only exceeded (in that temperatures were lower) one year in 5.

The table shows the stations arranged under county headings in alphabetical order, the number of years of record, the median temperature, and the "1 in 5" temperature. In addition, the range of annual minima is shown and the root mean square of the variation from the median. The medians are also shown on the accompanying map.

Discussion of Data.

Despite the simple method of treatment, certain interesting facts emerge. The stations fall into four main groups - coastal, urban, country and hill stations.

The coastal medians show considerable uniformity. In the south-west between Anglesey and Portland, the values lie chiefly within the 27-29°F range. Elsewhere most stations show values between 23-25°F.

The urban stations are generally warmer than the surrounding countryside; Westminster, Birmingham, Sheffield and Manchester all have either 22 or 23°F for the median value.

The hill stations are few in number, Buxton (14°F) Newton Rigg (13°F) and Rhayader (13°F) being the only ones in this category.

The country stations range between 15 and 20°F with the coldest areas in the East Midlands, Kent, Salisbury Plane and around Shrewsbury.

It is inadvisable to draw isopleths to represent such data as minimum temperatures are essentially a local phenomena. Nevertheless the figures on the map give a good general picture of the median values.

M.O.7c.
Bracknell.
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Agriculture Memorandum XLI.

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ANNUAL MINIMUM TEMPERATURES.

ENGLAND	Lowest °F	1 in 5 °F	Median °F	Root Mean Square	Highest °F	No.of Years
Berkshire: Reading University	9	17	20	3.7	25	40
Shinfield	5	15	19	4.1	24	40
Buckinghamshire: Woburn	-5	9	16	6.1	21	60
Cambridgeshire: Cambridge	1	11	18	5.4	24	60
Cheshire: Bidston	15	21	24	3.6	30	60
Macclesfield	7	14	18	4.2	24	60
Cornwall: Bude	12	20	23	3.5	28	47
Falmouth	18	23	27	3.3	32	60
Gulval	13	24	27	3.9	32	35
Newquay	16	22	25	3.5	31	60
Penzance	17	25	29	3.6	33	60
Cumberland: Keswick	0	11	18	5.7	25	47
Newton Rigg	0	8	13	5.4	22	55
Derbyshire: Buxton	-1	9	14	5.3	22	60
Devonshire: Barnstaple	3	17	20	4.0	27	60
Cullompton	2	16	19	4.4	26	52
Exmouth	10	20	23	4.3	28	46
Ilfracombe	19	25	28	3.0	32	60
Plymouth	16	21	24	3.4	29	40
Princetown	8	15	19	3.3	27	50
Torquay	16	23	26	3.2	30	60
Dorset: Portland Bill	19	24	27	3.0	32	54
Shaftesbury	9	17	20	3.5	25	60
Weymouth	16	21	23	3.1	31	60
Durham: Chopwellwood	5	12	18	5.1	24	48
Ushaw	9	15	20	4.1	25	60
Essex: Earls Colne	6	15	19	4.2	23	34
Halstead	1	11	17	5.8	25	57
Shoeburyness	9	17	21	3.9	27	60
Gloucestershire: Cheltenham	6	16	20	4.1	25	56
Hampshire: Bournemouth	12	18	21	3.4	28	56
Long Sutton	8	10	17	4.6	22	36
Portsmouth	12	21	24	3.3	29	59
South Farnborough	2	10	16	4.6	24	45
Southampton	11	18	21	3.6	27	59
Herefordshire: Ross-on-Wye	-3	13	18	6.3	23	46
Hertfordshire: Rothamsted	4	13	18	4.6	24	60
Isle of Man: Douglas	19	24	26	2.7	30	40

continued:

Isle of Wight: Sandown	13	21	24	3.5	29	53
Ventnor	12	21	25	4.0	32	41
Kent: Dover	12	18	22	3.9	29	49
E. Malling	0	12	16	5.3	24	35
Folkestone	12	19	24	4.4	29	47
Margate	18	21	25	3.4	32	56
Tunbridge Wells	4	13	17	4.2	24	58
Lancashire: Bolton	7	15	20	4.2	26	60
Manchester	8	16	22	4.3	25	56
Morecombe	8	17	21	4.3	26	44
Southport	7	16	20	4.3	26	60
Stonyhurst	7	15	20	3.9	25	60
Lincolnshire: Cranwell	4	13	18	5.1	24	41
Skegness	10	16	21	4.4	28	56
London: Hampstead	9	17	21	3.9	26	49
Westminster	14	20	23	3.1	28	57
Norfolk: Cromer	14	20	23	3.0	28	57
Sprowston	7	1	18	5.2	25	35
Yarmouth	12	18	23	3.8	27	60
Northamptonshire: Raunds	-1	10	17	6.1	22	53
Northumberland: Cockle Park	6	15	20	4.5	25	60
Tynemouth	11	19	23	4.2	30	48
Nottinghamshire: Nottingham	7	14	19	4.3	26	60
Sutton Bonnington	0	11	15	5.5	23	36
Oxfordshire: Oxford	3	16	19	4.0	24	60
Scillies: St. Mary's	25	30	32	2.7	37	60
Shropshire: Shrewsbury	0	7	15	6.5	25	45
Somerset: Bath	4	16	20	4.5	25	60
Cannington	4	17	21	5.5	28	31
Long Ashton	7	16	20	4.9	24	40
Weston-super-Mare	11	19	21	3.6	27	45
Suffolk: Felixstowe	14	19	23	3.3	29	38
Surrey: Croydon	5	14	20	4.0	26	41
Wisley	5	13	18	4.6	25	57
Sussex: Bognor	12	19	23	3.7	29	57
Brighton	14	20	23	3.1	29	52
Eastbourne	12	19	23	3.8	29	56
Worthing	13	20	23	3.4	29	60
Warwickshire: Birmingham	11	18	22	4.0	27	60
Coventry	0	14	18	4.7	24	60
Wiltshire: Marlborough	0	10	16	5.3	23	60
Porton	5	12	16	3.7	24	41

continued:

Worcestershire: Malvern	7	17	20	3.7	26	58
Yorkshire: Ampleforth	11	16	20	3.7	27	60
Huddersfield	7	13	18	4.4	23	60
Hull	12	17	22	4.2	28	60
Ilkley	3	12	17	4.5	22	37
Scarborough	16	23	25	3.0	29	60
Sheffield	11	18	22	3.5	28	60
Spurn Head	10	24	26	3.3	30	60
Wakefield	5	14	19	4.3	25	54
York	7	14	19	4.7	26	60
WALES:						
Anglesey: Holyhead	10	23	27	4.9	32	60
Caernarvon: Llandudno	10	22	25	3.9	28	60
Cardigan: Aberystwyth	12	20	24	3.6	27	60
P.B.S.	12	18	22	3.7	26	35
Flint: Hawarden	0	11	20	6.2	26	60
Rhyl	10	16	22	4.6	26	56
Glamorgan: Cardiff	2	18	22	4.8	28	57
Swansea	14	21	25	3.7	30	48
Monmouth: Newport	4	18	21	4.9	29	43
Montgomery: Welshpool	-4	12	16	6.0	23	42
Pembroke: St. Anns Head	19	24	27	3.1	33	47
Radnor: Rhayador	-10	11	13	5.7	20	37
Channel Isles: Jersey	17	25	27	3.8	34	50

Annual Minimum Temperatures

Appendix to Agricultural Memorandum No. XLI

Erratum. Under Sprowston, second column for 1, read 11.
Summary of the annual minima for Scotland is as follows:-

SCOTLAND		Lowest °F	1 in 5 °F	Median °F	Root Mean Square	Highest °F	No. of Years
Aberdeenshire	Braemar	-13	0	3	5.4	14	54
	Balmoral	-10	0	6	5.5	16	55
	Logie Coldstone	-10	3	7	6.0	18	38
	Craibstone	10	15	17	4.3	27	35
	Aberdeen	5	14	19	5.2	27	58
Angus	Dundee	8	16	21	4.9	27	45
	Arbroath	4	15	19	4.7	27	50
	Montrose	5	16	20	3.9	26	59
	Kettins	- 5	5	13	6.7	22	36
Argyll	Tiree	20	23	25	2.7	31	34
	Oban	10	19	22	3.6	23	49
Ayr	Colmonell	5	15	18	4.0	24	53
	Kilmarnock	0	11	18	5.8	24	47
Banff	Banff	5	15	20	5.2	29	44
Berwick	Marchmont	5	12	18	4.4	25	60
Bute	Rothesay	12	22	25	3.4	31	59
Caithness	Wick	8	13	18	3.8	28	60
Dumbarton	Helensborough	7	16	19	4.2	27	60
Dumfries	Dumfries	5	14	18	4.5	23	60
	Ruthwell	1	11	16	5.1	22	49
	Eskdalemuir	- 1	7	11	5.0	23	51
East Lothian	N. Berwick	6	14	21	5.2	26	37
Fife	Kirkcaldy	6	14	21	5.3	27	43
	Cupar	3	12	17	5.2	25	52
	Leuchars	10	13	19	4.4	26	39
	St. Andrews	7	12	19	4.6	25	46
Inverness	Onich	12	16	20	3.3	26	35
	Fort William	5	11	18	4.6	25	49
	Fort Augustus	- 1	9	14	4.6	23	50
	Dalwhinnie	- 7	0	4	5.3	14	30
	Inverness	9	13	19	4.5	26	58

/Lenark

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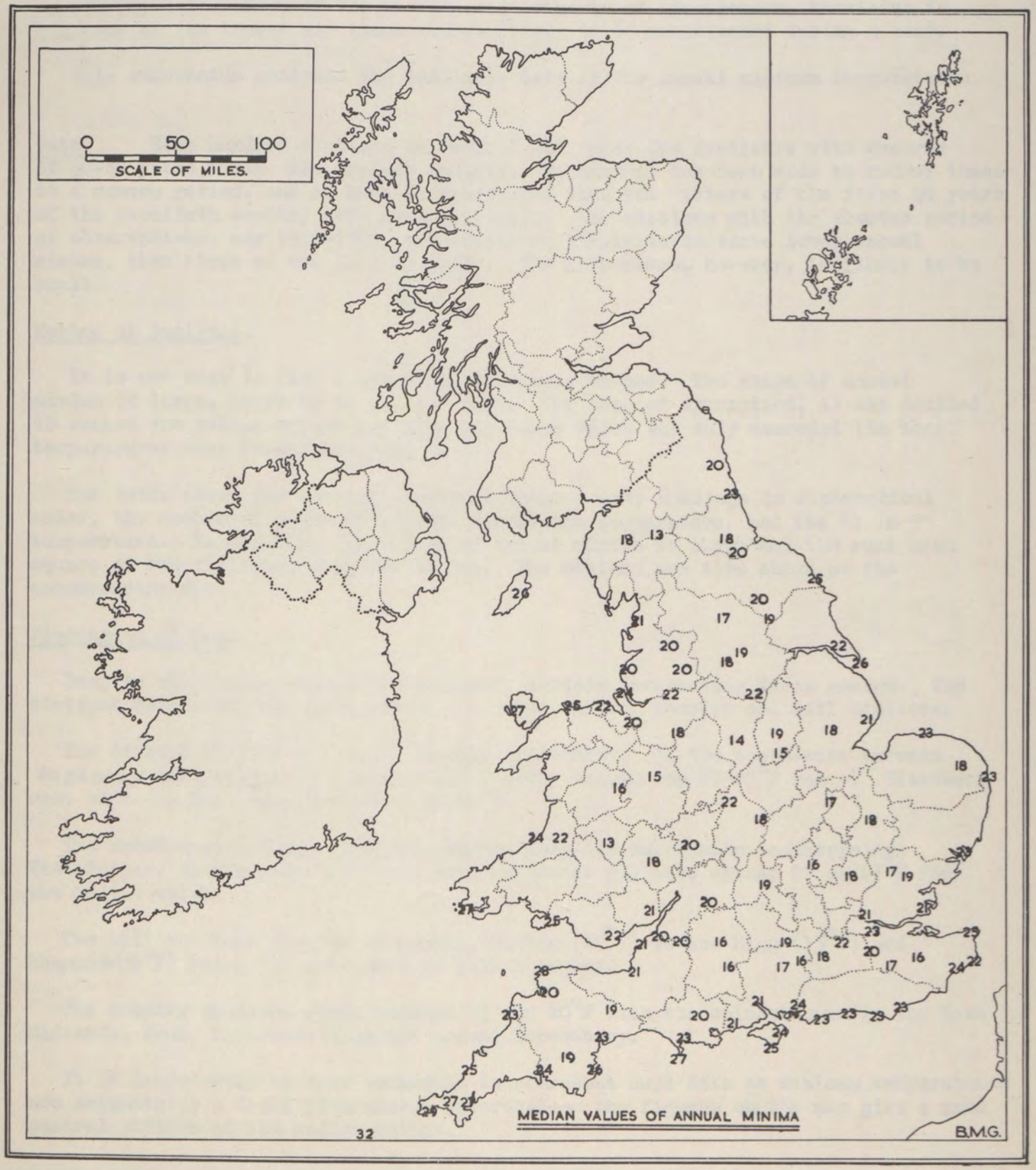
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SCALE OF MILES.
MEDIAN VALUES OF ANNUAL MINIMA
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32